2014 11th IAPR International Workshop on Document Analysis **Systems**

(DAS 2014)

Tours, France 7 – 10 April 2014



IEEE Catalog Number:

CFP1470E-POD **ISBN**: 978-1-4799-3245-0

2014 11th IAPR International Workshop on Document Analysis Systems

DAS 2014

Table of Contents

Message from the General Chairs and Program Chairs	Xi
Committees	xiii
Program Committee and Subreviewers	xvi
Sponsors	xx
Oral-1: Document Classification and Retrieval	
Plane Geometry Figure Retrieval with Bag of Shapes Lu Liu, Xiaoqing Lu, Keqiang Li, Jingwei Qu, Liangcai Gao, and Zhi Tang	1
Multiscale Stroke-Based Page Segmentation Approach	6
Business Forms Classification Using Earth Mover's Distance Syed Saqib Bukhari, Markus Ebbecke, and Michael Gillmann	11
Oral-2: Writer Identification and Verification	
Multiclass Learning for Writer Identification Using Error-Correcting Codes Utkarsh Porwal, Chetan Ramaiah, Ashish Kumar, and Venu Govindaraju	16
A Hierarchical Framework for Accent Based Writer Identification	21
Feasibility Study of Visualizing Diversity of Japanese Hiragana Handwritings by Multidimensional Scaling of Earth Mover's Distance toward Assisting Forensic Experts in Writer Verification	26
Yoshinori Akao, Atsushi Yamamoto, and Yoshiyasu Higashikawa	20

Oral-3: Text Detection and Correction

Flexible Noisy Text Correction	31
Andrey Sariev, Vladislav Nenchev, Stefan Gerdjikov, Petar Mitankin, Hristo Ganchev,	
Stoyan Mihov, and Tinko Tinchev	
Planting, Growing, and Pruning Trees: Connected Filters Applied to Document Image Analysis	26
Guillaume Lazzara, Thierry Géraud, and Roland Levillain	30
Text Detection Using Delaunay Triangulation in Video Sequence	41
Liang Wu, Palaiahnakote Shivakumara, Tong Lu, and Chew Lim Tan	
A Typed and Handwritten Text Block Segmentation System for Heterogeneous	
and Complex Documents	46
P. Barlas, S. Adam, C. Chatelain, and T. Paquet	
Oral-4: Handwritten Text Recognition and Graph Edit Distances	
A System for Recognizing Online Handwritten Mathematical Expressions	
and Improvement of Structure Analysis	51
Anh Duc Le, Truyen Van Phan, and Masaki Nakagawa	
Curriculum Learning for Handwritten Text Line Recognition	56
Jérôme Louradour and Christopher Kermorvant	
Iterative Bipartite Graph Edit Distance Approximation	61
Poster-1	
A Context Based Text Summarization System	66
Rafael Ferreira, Frederico Freitas, Luciano de Souza Cabral, Rafael Dueire Lins,	00
Rinaldo Lima, Gabriel França, Steven J. Simske, and Luciano Favaro	
A Combined System for Text Line Extraction and Handwriting Recognition	
in Historical Documents	71
Andreas Fischer, Micheal Baechler, Angelika Garz, Marcus Liwicki, and Rolf Ingold	
Local Binary Patterns for Arabic Optical Font Recognition	76
Anguelos Nicolaou, Fouad Slimane, Volker Maergner, and Marcus Liwicki	
NIST 2013 Open Handwriting Recognition and Translation (Open HaRT'13)	
Evaluation	81
Audrey Tong, Mark Przybocki, Volker Märgner, and Haikal El Abed	
Holistic Recognition of Online Handwritten Words Based on an Ensemble of SVM	
Classifiers	86
A Srimany S Dutta Chowdhuri II Rhattachanya, and S K Parui	

leading of Haridwritteri Matrieriatical Characters off Whiteboards Osing Colodi	01
Images Behrang Sabeghi Saroui and Volker Sorge	91
Historical Chinese Character Recognition Method Based on Style Transfer Mapping Bohan Li, Liangrui Peng, and Jingning Ji	96
Sequential Word Spotting in Historical Handwritten Documents	101
Evaluation of Texture Features for Offline Arabic Writer Identification	106
The RWTH Large Vocabulary Arabic Handwriting Recognition System	111
Context-Dependent Confusions Rules for Building Error Model Using Weighted Finite State Transducers for OCR Post-Processing	116
Multilingual Off-Line Handwriting Recognition in Real-World Images	121
Multi-oriented Handwritten Annotations Extraction from Scanned Documents	126
The Influence of Language Orthographic Characteristics on Digital Word Recognition	131
Multi-oriented Text Recognition in Graphical Documents Using HMM	136
Towards a Robust OCR System for Indic Scripts Praveen Krishnan, Naveen Sankaran, Ajeet Kumar Singh, and C.V. Jawahar	141
Printer Identification Using Supervised Learning for Document Forgery Detection	146
Text Classification via iVector Based Feature Representation Shengxin Zha, Xujun Peng, Huaigu Cao, Xiandan Zhuang, Pradeep Natarajan, and Prem Natarajan	151
Spotting Symbol Using Sparsity over Learned Dictionary of Local Descriptors	156
The A2iA Arabic Handwritten Text Recognition System at the Open HaRT2013 Evaluation	161
Théodore Bluche, Jérôme Louradour, Maxime Knibbe, Bastien Moysset, Mohamed Faouzi Benzeghiba, and Christopher Kermorvant	
A Cache Language Model for Whole Document Handwriting Recognition	166

On-line Handwritten Mathematical Expression Recognition Method Based	171
on Statistical and Semantic Analysis	1/1
Word-Graph Based Handwriting Key-Word Spotting: Impact of Word-Graph Size	
on Performance	176
Alejandro Héctor Toselli and Enrique Vidal	
Oral-5a: OCR, Word Spotting, and Recognition	
Combining Focus Measure Operators to Predict OCR Accuracy in Mobile-Captured Document Images	181
Marçal Rusiñol, Joseph Chazalon, and Jean-Marc Ogier	
End-to-End Text Recognition Using Local Ternary Patterns, MSER and Deep Convolutional Nets	196
Michael Opitz, Markus Diem, Stefan Fiel, Florian Kleber, and Robert Sablatnig	100
Adapting Tesseract for Complex Scripts: An Example for Urdu Nastalique	191
Qurat ul Ain Akram, Sarmad Hussain, Aneta Niazi, Umair Anjum, and Faheem Irfan	
Performance Improvement in Local Feature Based Camera-Captured Character	
Recognition	196
Takahiro Matsuda, Masakazu Iwamura, and Koichi Kise	
Oral-5b: OCR, Word Spotting, and Recognition	
OCR Performance Prediction Using a Bag of Allographs and Support Vector	
Regression	202
Tapan Kumar Bhowmik, Thierry Paquet, and Nicolas Ragot	
A Novel Learning-Free Word Spotting Approach Based on Graph Representation	207
Peng Wang, Véronique Eglin, Christophe Garcia, Christine Largeron, Josep Lladós, and Alicia Fornés	
Over-Generative Finite State Transducer N-Gram for Out-of-Vocabulary Word	
Recognition	212
Ronaldo Messina and Christopher Kermorvant	
Oral-6: Super-Resolution and Born Digital Document Processing	
CERMINE — Automatic Extraction of Metadata and References from Scientific	
Literature	217
Dominika Tkaczyk, Pawel Szostek, Piotr Jan Dendek, Mateusz Fedoryszak, and Lukasz Bolikowski	
End-to-End Conversion of HTML Tables for Populating a Relational Database	222
George Nagy, Sharad Seth, and David W. Embley	

Efficient Example-Based Super-Resolution of Single Text Images Based on Selective	
Patch Processing	227
Nibal Nayef, Joseph Chazalon, Petra Gomez-Krämer, and Jean-Marc Ogier	
Real-Time Document Image Super-Resolution by Fast Matting	232
Yun Zheng, Xudong Kang, Shutao Li, Yuan He, and Jun Sun	
Oral-7: Ground Truthing and Performance Evaluation	
Ground-Truth Production in the Transcriptorium Project	237
Basilis Gatos, Georgios Louloudis, Tim Causer, Kris Grint, Verónica Romero,	
Joan Andreu Sánchez, Alejandro H. Toselli, and Enrique Vidal	
An On-line Platform for Ground Truthing and Performance Evaluation of Text	
Extraction Systems	242
Dimosthenis Karatzas, Sergi Robles, and Lluis Gomez	
Ground-Truth and Performance Evaluation for Page Layout Analysis of Born-Digital	
Documents	247
Xin Tao, Zhi Tang, Canhui Xu, and Liangcai Gao	
Poster-2	
Forgery Detection Based on Intrinsic Document Contents	252
Amr Gamal Hamed Ahmed and Faisal Shafait	
Newspaper Article Extraction Using Hierarchical Fixed Point Model	257
Anukriti Bansal, Santanu Chaudhury, Sumantra Dutta Roy, and J.B. Srivastava	
A Seed-Based Segmentation Method for Scene Text Extraction	262
Bo Bai, Fei Yin, and Cheng Lin Liu	
Color Descriptor for Content-Based Drawing Retrieval	267
Christophe Rigaud, Dimosthenis Karatzas, Jean-Christophe Burie, and Jean-Marc Ogier	
A New One-Class Classification Method Based on Symbolic Representation:	
Application to Document Classification	272
Fahimeh Alaei, Nathalie Girard, Sabine Barrat, and Jean-Yves Ramel	
Automatic Training Set Generation for Better Historic Document Transcription	
and Compression	277
Gabriel de França Pereira e Silva, Rafael Dueire Lins, and Cesar Gomes	
Graph Model Optimization Based Historical Chinese Character Segmentation	
Method	282
Jingning Ji, Liangrui Peng, and Bohan Li	
Empirical Evaluation of CRF-Based Bibliography Extraction from Reference Strings	287
Manahu Ohta, Daiki Arauchi, Atsuhiro Takasu, and Jun Adachi	

Robustness Assessment of Texture Features for the Segmentation of Ancient	
Documents	293
Maroua Mehri, Van Cuong Kieu, Mohamed Mhiri, Pierre Héroux, Petra Gomez-Krämer, Mohamed Ali Mahjoub, and Rémy Mullot	
Fast and Optimal Binary Template Matching Application to Manga Copyright	
Protection	298
Mathieu Delalandre, Motoi Iwata, and Koichi Kise	
AreCAPTCHA: Outsourcing Arabic Text Digitization to Native Speakers	304
A Study to Achieve Manga Character Retrieval Method for Manga Images	309
Improving Classification of an Industrial Document Image Database by Combining Visual and Textual Features	314
Olivier Augereau, Nicholas Journet, Anne Vialard, and Jean-Philippe Domenger	
The Robustness of a New 3D CAPTCHA	319
A Complete Logo Detection/Recognition System for Document Images	324
A Two Level Algorithm for Text Detection in Natural Scene Images	329
Land Map Images Binarization Based on Distance Transform and Adaptive Threshold	334
Samit Biswas, Sekhar Mandal, Amit Kumar Das, and Bhabatosh Chanda	
A New Laplacian Method for Arbitrarily-Oriented Word Segmentation in Video	339
Separation of Graphics (Superimposed) and Scene Text in Video Frames	344
The Maurdor Project: Improving Automatic Processing of Digital Documents	349
Design of Unsupervised Feature Extraction System for On-line Bangla Handwriting Recognition	355
Volkmar Frinken, Nilanjana Bhattacharya, and Umapada Pal	
Logical Labeling of Fixed Layout PDF Documents Using Multiple Contexts	360
Text Line Segmentation Based on Matched Filtering and Top-Down Grouping	
for Handwritten Documents	365
Author Index	370